AERIAL RADIATION SURVEY AREAS

One of the USDOE Bell B412 helicopters used to fly the aerial radiation surveys over the Navajo Nation. The twin engine helicopters were flown at an altitude of 150 feet above ground level with 300 foot flight line spacings for most of the surveys. This flight configuration resulted in a footprint of 300 feet, or the total radiation from an area with a 300 foot diameter.

A Bell B412 helicopter in-flight. The white detector pods mounted on the sides of the skid rack contained twelve 2x4x16-inch log-type sodium iodide detectors.

To fully characterize the radiation levels, it is necessary to make ground radiation measurements. This is because the aerial surveys do not pinpoint exact levels of radiation within any given area of 300 foot diameter. Field radiation measurements were taken using hand-held radiation meters.

Patti Collins, USEPA Region 9 Project Manager, next to an AMS helicopter at the Flagstaff Airport during the Cameron/Tuba City radiation surveys.

Data processing personnel from the USDOE Remote Sensing Laboratory were in the field to perform post-flight analysis of the data. This photo shows part of the AMS Mobile Laboratory.

A Radiation and Environmental Data Analysis Computer (REDAC) was located at each survey base of operation. Two REDAC configurations were used: 1) a mobile laboratory, based in the AMS mobile laboratory, and 2) a portable system was set up in a motel room. The REDAC systems were used to perform post-flight analysis in the field to ensure that there were no problems with the data.

AMS pilots were available to show the local community the helicopters and to explain what was being surveyed and how the radiation survey equipment worked.

The facing map shows the locations of the aerial radiation survey boundaries flown on the Navajo Nation from 1994 to 1999. The aerial surveys were funded by the USEPA and flown by the USDOE Remote Sensing Laboratory's Aerial Measuring System (AMS) in Las Vegas, Nevada. The AMS records gamma ray, aircraft position, and weather data at one-second intervals on data storage devices for post-flight analysis on a ground-based computer.

Gamma radiation was detected with thallium activated sodium iodide scintillation detectors. Aircraft position was established using a real-time differential Global Positioning System and radar altimeter. After aerial radiation surveys were flown, ground radiation measurements and home surveys were conducted.